

FLIGHT

The
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AND
AIRSHIPS

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"FLIGHT" PHOTOGRAPHS.

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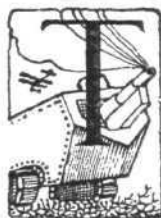
DIARY OF CURRENT AND FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in this list:—

1928

- Feb. 2 "Ground Transport for an Air Organisation." Flt.-Lieut. R. E. H. Allen, before R.Ae.S. & Inst.Ae.E.
- Feb. 7 "The Maintenance and Repair of Aero Engines." Wing-Com. J. G. V. Fowler, Joint Meeting R.Ae.S. & Inst.Ae.E., and Inst.A.E.
- Feb. 16 "Experiments on Model Airscrews at High Tip Speeds." Mr. G. P. Douglas, before R.Ae.S. & Inst.Ae.E.
- Mar. 1 "Experiences with the Baghdad Air Mail." Wing-Com. R. M. Hill, before R.Ae.S. & Inst.Ae.E.

EDITORIAL COMMENT



THE paper read before the R.Ae.S. and I.Ae.E., on January 19, by Dr. W. S. Tucker, and entitled "The Problem of Noise in Civil Aircraft, and the Possibilities of its Elimination," dealt with a subject, the importance of which is not always recognised. The lecturer treated his subject in a very scientific manner,

and we do not propose here to go into the science of sound propagation as dealt with by Dr. Tucker. His general statements and conclusions, however, deserve to be given serious attention, for unless and until we succeed in getting rid of the more objectionable part of the noise, or at least of its effects, it is quite certain that many who would otherwise use the air services will refrain from doing so owing to the unpleasant effects of sitting for hours in a din, which in most of the machines now in use (we are not confining our remarks to British machines only) very quickly becomes a severe strain on the nervous system.

Dr. Tucker placed first in the list of offenders the noise of the engine exhaust, and expressed the view that it was probably immaterial whether the engine was of radial, in-line or Vee type. Accepting the view that the engine exhaust is the most prominent of the noises, that is probably true. But with all due respect to the lecturer, we rather doubt whether that is the case. Valve rockers, propeller noises, and the sounds produced by the air rushing past sharp edges appear to us to be at least as bad offenders. There should not be any real difficulty in obtaining comparatively effective silencing of the exhaust. To do so will undoubtedly, as Dr. Tucker pointed out, mean additional weight. There is another side to the question, which is also serious from the operator's point of view. We believe it to be a fact that the exhaust collector system of one well-known radial engine costs as much as an "Austin 7" car! On a three-engined machine the figure becomes a not unimportant item.

Propeller noises are probably worse in the case of those with high tip speeds, although the geared engine usually drives a propeller of greater diameter, and therefore the tip speeds may again approach those

of the direct-drive screw. That we shall ever succeed in silencing the airscrews, therefore, seems very doubtful. The same applies to a number of other noises caused by the air rushing over exposed parts.

Of remedies, Dr. Tucker called attention to the use of three-ply cabin walls in conjunction with a lining of the cabin with Balsam wool, and covering the cabin floor with a fairly thick carpet. Taking as an example, the "Argosy" machine, the noise in the cabin could by these means be reduced to about one-twentieth of that in the bare cabin empty. The extra weight entailed would, however, be in the neighbourhood of 400 lbs., or the equivalent of two passengers with their luggage. The problem which has to be settled is whether machines can be filled on every flight under present conditions, or whether, because of machines being only partly filled on many flights, it would be worth while to sacrifice the extra paying load in order to attract a greater number of passengers. This problem will call for close co-operation between the aircraft firms and the operational companies. That some solution must be found fairly soon can scarcely be denied.



And Silence

While noise was the subject of the lecture on January 19, silence might almost be said to be the keynote at the meeting of the R.Ae.S. and I.Ae.E. on January 26. The lecturers "regretted that they were not allowed to give information concerning etc., etc.," and the same sort of regret seemed to spread to many of those who took part in the ensuing discussion of the



Well-Merited Recognition

ACCORDING to the *Daily Telegraph* of January 31, arrangements are being made for the celebrations of the twentieth anniversary of the first aeroplane flight made over British soil. This was made at Brooklands on June 8, 1908, by Mr. A. V. Roe on his own Triplane fitted with a 24 h.p. Antoinette engine. He flew for 60 yards at a height of a few feet.

Proposed British Long-Distance Attempt

CAPT. W. G. R. HINCHLIFFE proposes to attempt a long-distance record with a Stinson-Detroit monoplane which he has bought in America. He intends to fly from England in the direction of India, and to reach if possible, Rangoon. The present record is held by Mr. C. Chamberlin and Mr. Levine, who flew 3,911 miles from New York to Helfta, Germany, on June 4-6, 1927.

Official Attempt on Speed Record Shortly

THE Air Ministry has decided that an official attempt upon the world's speed record shall be made about March on a Supermarine-Napier S5 machine. Calshot will be the venue, and the pilot will probably be Flight-Lieut. S. M. Kinkead, who took part in the last Schneider Trophy race. The record to be beaten is that of 296.94 m.p.h. set up by Maj. di Bernardi in November last.

French Claim New Record

It is reported that M. Paillard and his mechanic, M. Lavertin, made a new world's speed record over a distance of 621 miles with a load of 1 ton. They flew the French monoplane named the "Oiseau Tango," which was designed for the proposed French Atlantic flight last year. The course was covered in 4 hrs. 10 mins. at an average speed of slightly over 135 m.p.h.

London's New Air Port

THE new Croydon air port came into being on January 30. For the first time air passengers were able to enjoy the comfort of the new buildings and to step into or alight from machines only a few yards from the waiting rooms. An extensive stretch of concrete floor has been laid down on which several machines can find accommodation simultaneously. The new buildings are not all complete, but the

papers on the Schneider machines, propellers and engines.

Major Mayo thought the "secrecy" a little unnecessary. Captain Sayers asked what benefit the Air Ministry expected from this particular brand of secrecy, and finally Col. Sempill complained that the secrecy was proving a great hindrance to a discussion of important technical problems.

To us it seems that all these speakers were somewhat wide of the mark. Mr. Mitchell's only reference to secrecy was to the effect that he was not permitted to give the results of the wind tunnel tests on models of the Schneider machines. Frankly, we cannot see that this is surprising. Next year we shall have to defend the Schneider Trophy, and it would be carrying good sportsmanship a little too far to present our competitors with all our wind channel data on this subject. Apart from these results, there is not, as far as we can see, any "secrecy" about anything whatever as far as the Air Ministry is concerned.

The position actually is that the Supermarine S.5, the Gloster IV, and the Napier racing engines are now on the Air Ministry's "Open List." This means that full particulars, illustrations, and even performance figures may be given, as far as the Air Ministry is concerned. FLIGHT suffers, perhaps, more than anyone else by the restrictions imposed by the Air Ministry, and we shall not, therefore, be accused of being biased in favour of "secrecy." But we do think that here is a case where it is a little unfair to blame the Ministry. That the constructors in question may not be altogether in favour of publishing full particulars is very natural. But in that case, why not say so, instead of letting it be assumed that the restrictions are official ones?



public accommodation is finished. One of the incoming machines from Paris brought over a horse which belonged to a cinema artist. Some difficulty had been experienced at Le Bourget in enticing this unusual passenger into the machine.

"Southampton" Flying-Boats for Australia

Two Supermarine "Southampton" flying-boats reached Melbourne recently. They have been bought for the Royal Australian Air Force at a reported cost of £17,000 each. Each is equipped with two 450 h.p. Napier "Lions." These two machines will co-operate with the four R.A.F. "Southampton" flying-boats now on their way to Australia.

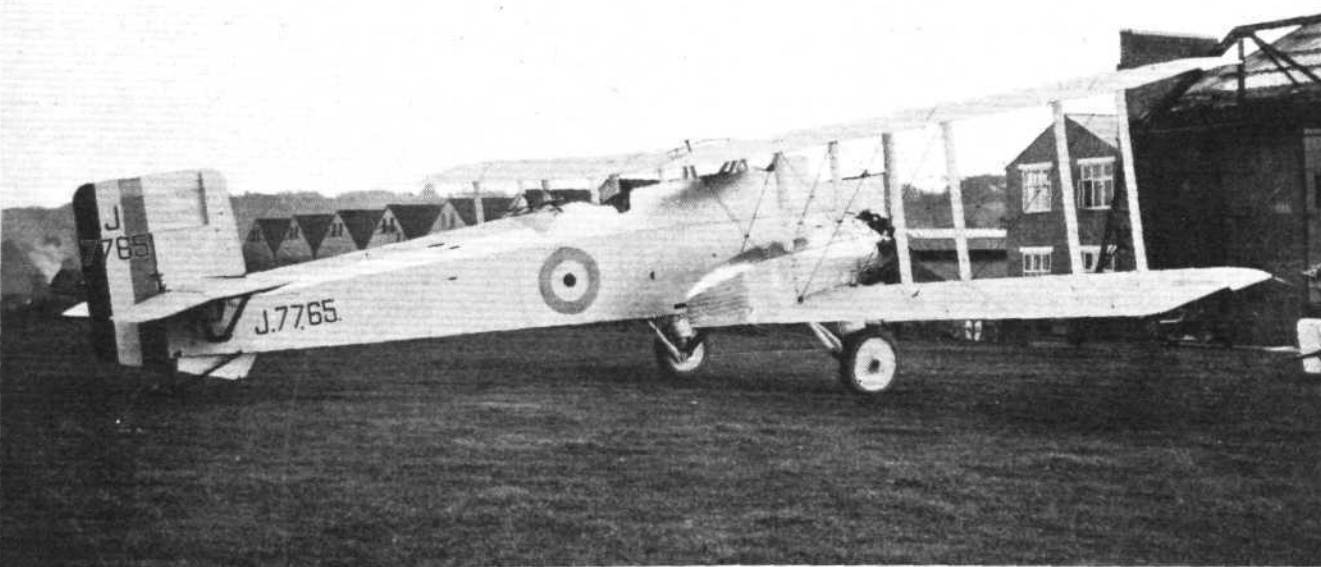
A Tale that is Told

A COCKTAIL Dance given by the H.G. Hawker Engineering Co., Ltd., at Kingston, on Thursday last, proved to be an unqualified success. The presence of Mr. and the Hon. Mrs. Sopwith, and Mr. and Mrs. F. Sigrist, gave the festivities an excellent lead. In addition to a super-efficient cocktail-buffet bar, a good dance band, and an excellent floor, there were several side shows to help enliven the proceedings. These included such national sports as "Darts" and "Rings," not forgetting a Treasure Hunt. The prizes of the evening were presented by His Worship, the Mayor of Q, whose arrival apparently no one witnessed, but whose departure in his Q-rious state coach (a navy's wheelbarrow) gave just that touch of dignity beloved of the British race.

Mr. Bennett, resplendent in red fez and sparkling decorations, was obviously enjoying himself, and like all the other "Hawkers" doing his best to ensure that the guests did the same. The twilight waltz gave "Webby" an opportunity of once more covering himself with glory and adoration (the while his absence was lamented at the Royal Aeronautical Society Schneider lecture).

The organisation was in the extremely able hands of Mr. Spriggs, who as usual proved more than equal to the occasion. None but a master mind could have conceived the brilliant idea of solving "this airship business" by causing "two Zepps. and a cloud" to be served at 1 a.m.

About 300 guests were present, and the fact that more than 200 were still there to sing "Auld Lang Syne" at 2 a.m. is proof that all enjoyed themselves.



A THREE-SEATER FIGHTER : The Westland " Westbury," fitted with two Bristol " Jupiter " engines, can also be converted into a high-performance bomber. (See p. 64)

THE WESTLAND "WESTBURY"

Two Bristol "Jupiter" Engines

CLASSED in the Air Ministry lists as a three-seater fighter, the Westland "Westbury," designed and built by the Westland Aircraft Works of Yeovil, could readily be adapted for use as a high-performance bomber, in spite of the fact that it was originally designed as a gun carrier and mounted two heavy calibre guns. In general design the "Westbury" is a normal three-bay biplane, with two Bristol "Jupiter" engines mounted on the wings. In the detail design, however, several interesting features are revealed on a closer inspection.

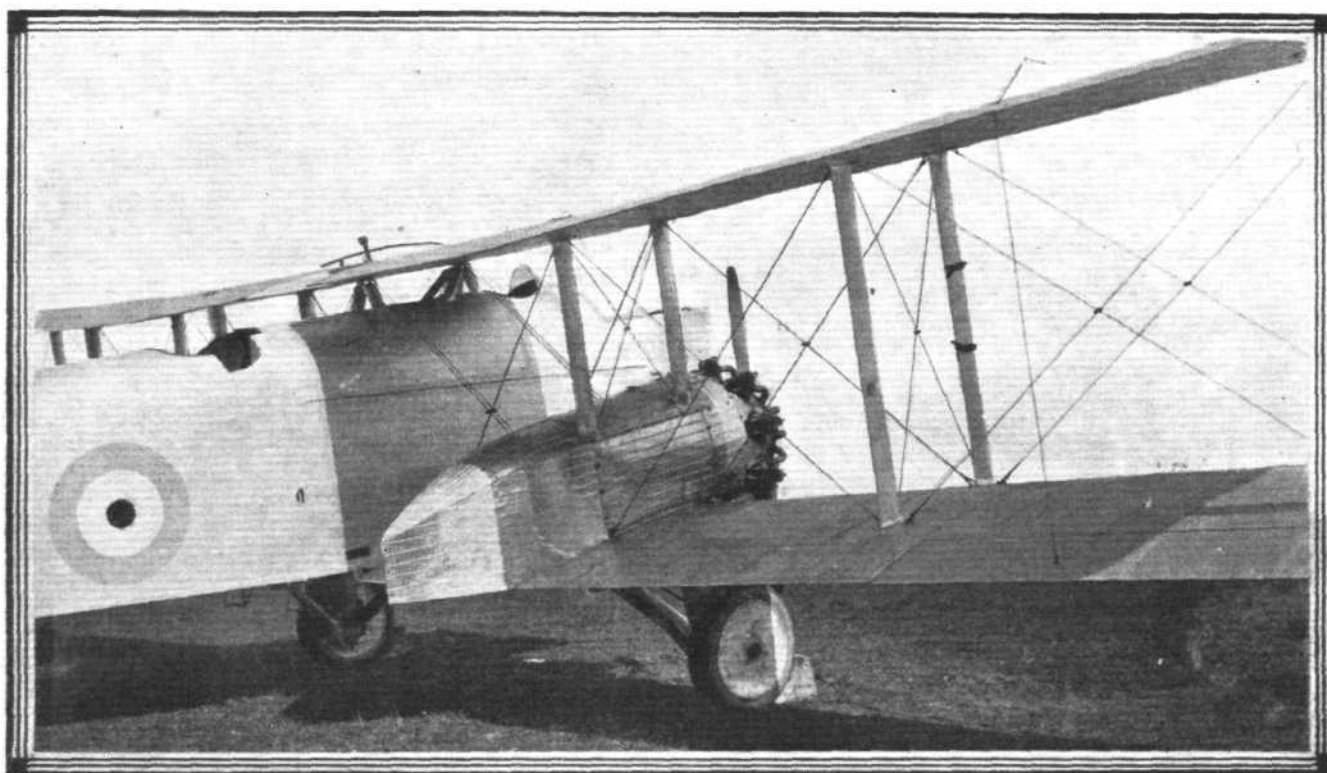
For instance, the fuselage is built up of three separate units, bolted together at the longerons. The forward unit is an all-wood structure of spruce with ply-wood covering, and contains the forward gun turret. This turret carries the rotating platform and gun mounting, and the platform and mounting can be rotated inside the cockpit by means of a hand wheel. It is self-locking in any position, and to rotate the mounting it is necessary to release the brake by

The wireless apparatus is fitted inside the fuselage, between the rear gunner's position and the pilot's cockpit. The instruments are mounted on a removable panel on the starboard side, and a small tip-up seat is provided for the operator.

The "Westbury" has been constructed both with normal wooden wings and with a mixed type of wing construction using Duralumin spars and wooden ribs.

The tail surfaces are of normal design, with the tail plane incidence gear of the Westland patented type. It will be observed that the bracing struts to the tail plane are below, so that the field of fire above the tail is particularly unrestricted.

Normally the "Westbury" is fitted with two "Jupiter" Mark VI engines, but if desired, the machine can be equipped with the geared "Jupiter VIII," or with supercharged engines. The engine mountings are of steel tubular construction, and are fixed on the lower inner plane sections. In addition to the engines, the mountings carry the petrol and



THE WESTLAND "WESTBURY": This view shows the mounting of the starboard "Jupiter," and also the forward cockpits, &c.

means of a pedal. The fact that the whole "nose" forms a separate unit enables replacement of the turret in case of damage, such as might be caused, for instance, by the machine "nosing up" on rough ground.

The second unit is the central portion of the fuselage, from the pilot's cockpit to aft of the rear gunner's cockpit, and is a steel tube structure. Finally, the aft portion of the fuselage is a normal braced girder structure of spruce and wire, bolted to the four steel tube longerons. Thus the entire rear portion can be easily detached from the central unit.

The deck fairing is attached to the longerons by means of clips, and that portion of it which lies aft of the rear gun is made easily detachable. Moreover, two distinct types of deck fairing are provided, the one for use when the machine carries the gun ring, and the other a plain fairing without the gun ring. The substitution of one fairing for the other can be carried out in a few moments. Normally there is, in addition to the aft gun, a lower Lewis gun mounting which enables the rear gunner to fire under the tail. A passage from the lower Lewis gun position runs forward to the front gun turret, so that any member of the crew has direct access to any other compartment. By the same passage the pilot can reach his cockpit, or he can use the foot holes in the sides of the fuselage and go along the "cat walk" on the top centre-section.

oil tanks, starting magneto and primer. The mountings project well forward of the leading edge of the wing, so that the engines are very accessible.

Owing to the unit construction of the fuselage, and to other features of the design, the "Westbury" is particularly easy to transport by rail, as there is no necessity to dismantle the engines, which can be left on their mountings with the inner wing sections. All parts of the machine can be got into standard railway trucks.

The "Westbury" is reported to be very pleasant to fly, and will handle well with one engine cut out. In fact, it not only flies level on one engine, but can actually be turned quite easily against the running engine.

Following are the main data relating to the Westland "Westbury":—

Length over all	43 ft. 4½ in. (13.2 m.).
Wing span	68 ft. (20.8 m.).
Height	13 ft. 9 in. (4.19 m.).
Wing chord	7 ft. (2.13 m.).
Wing area	875 sq. ft. (81.3 m. ²).
Weight light	4,845 lb. (2,200 kg.).
Disposable load	2,763 lb. (1,256 kg.).
Total loaded weight	7,877 lb. (3,580 kg.).

$$\text{Wing loading } \frac{7,877}{875} = 9 \text{ lb./sq. ft.} = \frac{3,580}{81.3} = 44 \text{ kg./m.}^2.$$

Power loading $\frac{7,877}{900} = 8.76 \text{ lb./h.p.} = 3.98 \text{ kg./h.p.}$
 Speed at 5,000 ft. (1,525 m.) .. 125 m.p.h. (201 km./h.).
 Speed at 10,000 ft. (3,050 m.) .. 122 m.p.h. (196.5 km./h.).
 Speed at 15,000 ft. (4,575 m.) .. 113 m.p.h. (182 km./h.).
 Climb to 5,000 ft. (1,525 m.) in $4\frac{1}{2}$ mins.
 „ 10,000 ft. (3,050 m.) in 10 mins.

Climb to 15,000 ft. (4,575 m.) in 19 mins.
 Service ceiling 21,000 ft. (6,400 m.).

“Everling Quantities” (Metric).

High speed figure 13
 Distance figure (top speed) 3
 Altitude figure (ceiling) 4.8

THE NAPIER “LION” RACING ENGINE

875 B.H.P. for a Weight of 835 lbs.

Low specific weight and small frontal area are the two outstanding features of the Napier “Lion” racing engine fitted in the three British machines which took part, and of which two gained first and second place, in the race for the Schneider Seaplane Trophy at Venice. A detailed description of the engine cannot be given, but a few particulars will, perhaps, serve to show the enormous progress in aero engine design and construction which this Napier product represents.

Like all the Napier “Lion” series, the racing engine has 12 cylinders, arranged in three blocks of four cylinders each, a formation variously known as the “W” and “Broad Arrow” formation. There was a time when not a few people held the view that an engine of this type would have too great a frontal area to enable really high speeds to be attained. That this view was incorrect was definitely established when Flight-Lieut. Webster won the Schneider Trophy Race at an average speed of 281.5 m.p.h. True, the racing engine presented a considerably smaller frontal area than does the normal “Lion,” but this reduction was made possible by a rearrangement of the engine accessories, rather than by any redesigning of the engine itself.

How compact the Napier racing engine is will be realised when we point out that the height is 2 ft. 10½ in., the width 3 ft. 2½ in., and the length 5 ft. 6½ in. The bore, by the way, is 5½ in. and the stroke 5½ in., while the compression ratio reaches the remarkably high value of 10 to 1. Needless to say, this high ratio is only possible by using a special fuel composed, it was stated by Capt. Wilkinson at a lecture at the R.Ae.S. and I.Ae.E., of 75 per cent. petrol, 25 per cent. benzol, with a small percentage of “Ethyl” added. Sparking plugs were rather a problem, but in the end a special K.L.G. plug was evolved which proved capable of standing up to its extremely difficult task.

The Napier racing engine is produced in two types; direct drive and geared. By great skill in design and workmanship, it has been possible to run this engine at a speed of 3,300

r.p.m., when the power output is 875 b.h.p. The direct-drive engine weighs 835 lbs. complete, giving a specific weight of 0.954 lb./b.h.p. The geared engine is slightly heavier, but even this has a specific weight as low as 1.05 lbs./b.h.p., weighing 920 lbs.

The reduction gear of the geared type of engine is of the double-reduction spur gear type, which has the advantage for racing aircraft, that the airscrew shaft, instead of being raised above the crankshaft, as is the case in the normal “Lion” engine, is coaxial with it. Thus the good streamline form of the nose of the fuselage is not interfered with.

The fact that the Schneider Trophy Race was over a distance of approximately 220 miles provided an opportunity for testing out the reliability of engines at full power, and in this connection it is worth remembering that the geared and direct-drive Napiers in the two Supermarine S.5 monoplanes which gained first and second places, respectively, in the race, ran without a falter for the whole of that distance.

Finally, it may be stated that the fuel consumption of the Napier racing engine is 50 gallons per hour, while the oil consumption is three gallons per hour. On a basis of 875 b.h.p., these consumptions work out at (taking the fuel at 7 lbs. per gallon and oil at 10 lbs. per gallon), 0.4 lb./h.p./hour and 0.034 lbs./h.p./hour, respectively, a total consumption of 0.434 lbs./h.p./hour.

It is now well known that sometime this spring an attempt will be made to beat the world's speed record established by the Italian pilot, de Bernardi. To do this, it will be necessary for the Supermarine S.5, or Gloster IV, whichever is used in the attempt, to average rather more than 300 m.p.h. over the 3-km. course. That the attempt will be successful there is good reason to hope, and if Great Britain should gain the distinction of being the first nation to exceed the 300 m.p.h., the Napier racing engine will be able to claim a very large share of the credit.

THE BRISTOL “MERCURY” MARK I.

800 B.H.P. for a Weight of 680 lbs.

ALTHOUGH a most unfortunate mishap at Venice denied the Carter-designed, Short-built “Crusader” monoplane a fair opportunity to demonstrate its capabilities, sufficient was learnt during practice flights to show that the machine was, to say the very least, a most interesting experiment. Whether or not the “Crusader” was as fast as the other Schneider machines does not, at the moment, matter, a great deal. The point to bear in mind is that it represented a serious attempt to prove that a really high-speed machine could be based upon a radial air-cooled engine. That engine was the Bristol “Mercury” Series I, developed from the now famous “Jupiter” which it resembles to this extent that it is a 9-cylinder radial air-cooled engine.

For fairly obvious reasons the “Mercury” cannot at present be described in detail but as the engine is likely to have a marked influence upon future design for service use, the following brief particulars of the Series I “Mercury” will, we feel sure, be of considerable interest to our readers.

The “Mercury I” as already indicated, is a single-bank 9-cylinder radial air-cooled engine, generally similar to, but differing in many respects from, the Bristol “Jupiter” which is now used so extensively in service and commercial aircraft in almost all parts of the world. In order to reduce air resistance, and thus do away with what is really the only serious drawback to the radial engine, the overall diameter of the “Mercury I” has been very materially reduced. This

reduction has been made possible partly by employing a shorter stroke, and partly by a more compact cylinder design and rocker gear. As in the “Jupiter” there is a single-throw, two-piece crankshaft, with a connecting rod assembly consisting of one master rod and eight articulated rods. The fact that the engine was designed for very fast machines permitted of running it at fairly high speed (2,500 r.p.m. normal). This fact, in conjunction with the use of an internal geared blower providing supercharging made possible the attainment of very high power (800 b.h.p. normal) for extremely low weight (680 lbs. complete), thus attaining the astonishing specific weight of 0.85 lb./b.h.p. As this figure represents the specific weight at normal power, and includes, of course, the cooling arrangements, it would appear that the “Mercury I” establishes a record for low specific weight.

The main data relating to the “Mercury I” are as follows:

Type	Air-cooled radial racing engine.
Number of cylinders ..	9
Bore	5.75 in.
Stroke	6.5 in.
Total swept volume ..	1,519 cub. in.
Normal speed	2,500 r.p.m.
Normal power	800 b.h.p.
Propeller	Direct drive left-hand tractor.
Supercharger	Integral geared blower
Complete weight	680 lbs.
Specific weight	0.85 lb./b.h.p.

SCHNEIDER TROPHY MACHINE DESIGN

Crowded Meeting of R.Ae.S. and I.Ae.E.

SELDOM, if ever, has there been a better attendance at a Royal Aeronautical Society paper than that drawn together by the joint lecture of Messrs. Mitchell, Ralli and Wilkinson on January 26, when the subject was "Schneider Trophy Machine Design." Col. the Master of Sempill was in the chair, and before calling upon Mr. Mitchell to read the first paper, he said the members of the Society had met firstly for the purpose of showing their appreciation of the three designers, and secondly to present to them the silver medals of the Society. The silver medal had previously been awarded to the late Mr. Cody, and more recently to Professor B. Melvill Jones for his work on control at stalling speed. He also expressed his pleasure at being able to welcome there that evening General Verduzio, the new Italian Air Attaché. As regards the Schneider Trophy race, the British victory had shown how successful a combination of machine, engine and propeller designers could be.

Mr. R. J. Mitchell, the chief engineer and designer of the Supermarine Aviation Works, whose S.5 monoplanes gained first and second place in the Schneider race, regretted that he was not allowed to say anything concerning the results of wind tunnel tests of models at the R.A.E. and N.P.L., and their effect on the design of the machines, and said he would have to confine himself chiefly to the constructional side. Taking as his starting point the Supermarine S.4 of 1925, Mr. Mitchell outlined the main items of development which led to the S.5 which won the race in 1927. These were:—

- (a) Lowering of wing on fuselage.
- (b) Adoption of system of wire bracing between floats, wing and fuselage.
- (c) Fuselage and floats of smaller cross-sectional area.
- (d) Wing surface radiators in place of Lambliins.
- (e) Engine of higher power, geared to give more efficient propeller.

Of these changes (a) gave a loss in speed of 3 m.p.h., but improved the pilot's view. (b) resulted in lowering the structure weight from 45 per cent. to 36 per cent., and increased the speed by 3 m.p.h. Under (c) there was a gain in speed of 11 m.p.h. due to smaller body and 4 m.p.h. due to smaller floats, the gains being due to smaller cross-sectional area and not to better form. (d) accounted for a gain of 24 m.p.h., and (e) the increase in engine power, for 30 m.p.h. [In this connection it should be pointed out that engine size, as distinct from engine power, was responsible for much of the improvement under that part of (c) accounted for by smaller fuselage.—Ed.]

Indulging in a few surmises as to how further speed is to be attained, Mr. Mitchell gave the following table, showing how a 12½ per cent. variation in various items might be expected to increase speed:—

Details of Variation (12½ per cent.)	Increase in speed. (m.p.h.)
Decrease in resistance	12.1
Increase in landing speed	9.7
Increase in horse-power	8.6
Decrease in structure weight	5.0
Decrease in engine weight	3.5

Of the 12½ per cent. variations used as a basis, it is seen that the greatest improvement is expected from a decrease of that order in resistance. The increase in landing speed comes next.

The Airscrews

Mr. P. A. Ralli then read a brief paper on the design of the airscrews for the Schneider race of 1927. (As is well known, Mr. Ralli was in charge of the work of designing the Fairey metal airscrews for the British Schneider machines.—Ed.) Handicapped by not being permitted to publish actual figures in detail, Mr. Ralli had hit upon the very ingenious scheme of making use, in his illustrations, of relative scales in which the figure "1.0" on the power and revolution scales indicated the maximum permissible power and revolutions specified. Racing airscrews, he pointed out, differed essentially from Service and commercial types in the extreme values of engine horse-power, revolutions and forward speed that entered into the specified requirements. These three variables, associated with the condition that the thrust horse-power should be a maximum, completely determined the airscrews, but the exceptional values which they assumed had important reactions on the efficiencies obtainable. Thus, the high power and especially the high revolutions had a detrimental effect, while the high forward speeds tended to restore the position.

If scale effect and slipstream interference could be ignored, the efficiency obtainable and the corresponding best diameter pitch and other features would be completely determinate. In that case, the best point on the power curve would be the highest permitted by the engine designers. Unfortunately, the effects of tip speed seriously impaired the thrust horse-power, and when taking tip speed into account, a new curve was obtained for thrust horse-power, which showed the paradoxical result that, even if powers and revolutions were higher than "1.0" (the figure representing maximum permissible) there would have been no gain in thrust horse-power. (This result might have been foreseen from an examination of the curves of equal "potential propeller efficiencies" given by Mr. J. D. North in his article on "Aircraft Performance" in *The Aircraft Engineer* (Technical supplement to *FLIGHT*) of March 31, 1927.—Ed.) With direct drive there was only one remedy: a reduction in diameter. Curves indicated that then the maximum efficiency occurred at 0.71 of the previous diameter. But the airscrew indicated by this point would have such small diameter that it would need about 30 blades to absorb the power! Also, it would deliver practically the whole of the slipstream on the body of the machine. The final tendency for design was towards the airscrew, which struck the most successful compromise between ideal slow-speed conditions, excessive tip speed loss and slipstream interference.

As a result of actual test flights, the best airscrew was found to be not very far removed from the ideal one as regards shape.

Turning to the subject of gearing, Mr. Ralli pointed out that, as previously stated, gearing was one of the most effective remedies for heavy tip speed losses. He did not, however, repeat the observations made in connection with the direct-drive engine, as the procedure was identical.

Some interesting figures were given relating to the problem of taking off with machines designed for such a wide speed range. If it was considered that at top speed the value of V/nD was well over 1.0 and the angle of the path pitch in the neighbourhood of 25 degrees at the tip and nearly 40 degrees half the radius, it was apparent that the blades were well stalled when "running up" with the aircraft stationary. Curves thrown on the screen showed that there was a breakdown in thrust at one-third of the speed range from the lower (i.e., aircraft stationary) end. In actual tests these theoretical considerations were so amply confirmed that one particular airscrew actually failed to take the machine off on a dead calm sea. Yet, as Mr. Ralli pointed out, the power loading of the machine must have been between 3.5 and 4.5 lb./h.p., and normal seaplanes take off with ease at 12 lbs./h.p. or over.

Examining the question of whether in the future the airscrew can contribute any further increase to the speed of racing aircraft, Mr. Ralli expressed the opinion that, with present disposition of engine, airscrew and aircraft structure, only minor advances were possible. Without wishing to make any positive assertions on the subject, he thought that advances of a really important order would probably be the result of a deliberate departure from present arrangements, whereby some of the disabilities under which the airscrew was now working would be partially or totally removed. With this somewhat cryptic remark Mr. Ralli concluded his section of the paper.

The Engines

The story was then taken up by Capt. G. S. Wilkinson, under whose direction the Napier racing engines were produced. "We of the Napier Company," Capt. Wilkinson said, "were, perhaps, a little biased, but we thought the 'Broad Arrow' type of engine would be best under all the circumstances, and, in view of the accumulated experience we had of that type, it could be developed to a very high standard of mechanical performance and power output."

Capt. Wilkinson then gave a brief outline of some of the changes and developments which led to the production of the 1927 racing engines as fitted in the three British challengers. From a study of the machines used in the 1925 race, the following points appeared to require particular attention in the new engines:—(a) The frontal area to be smaller; (b) the engine to be of such form that the fuselage could generally be of fine streamline shape and of small dimensions, particularly immediately behind the airscrew;

(c) the power of the engine to be increased as much as possible; and (d) the weight of the engine to be kept as low as possible consistent with reliability.

It was thought that a re-design of the engine so as to enable the drag of the fuselage to be reduced would have a greater influence on improving the performance of the aircraft than any increase in power which appeared feasible. The cylinder blocks had to project beyond the streamline shape contemplated, and were, therefore, made as small in external dimensions as possible, and arranged to have a smooth exterior at the outer ends, which would not require any additional external cowling. The cylinder blocks were provided with means for attaching cowlings to fair in between the cylinder blocks and for attaching the cowlings in front of and behind the blocks.

The mounting of auxiliaries was then altered so as to give practically no interference with the fuselage. Thus, the magnetos were moved from the back to the front and placed parallel with the crankshaft in such a manner that they came inside the fairings. The water system was altered so that all pipes came inside the shape of the fuselage, by having outlet pipes in bottom of Vee between cylinder-blocks.

Having "cleaned up" the engine, there remained the question of power output. Increased compression ratios and higher speeds of revolution were tried, and were found possible. These resulted in a considerable increase in power.

When preparing the original scheme for the 1927 engines it was decided to have no reduction gearing for the airscrews, as it was hoped that definite evidence as to airscrew efficiencies would be available before the manufacture of the engines was commenced. Unfortunately, the full-scale research on airscrews was delayed, and some engines of the direct-drive type were put in hand. Some time after this it was thought that a reduction gear would be desirable, and it was desired to have both geared and ungeared engines. By this time the machines had been designed, and it was thus important that the gearing should be of a form that would not require any considerable alteration to the machines. Consequently, the type of gear adopted was of the double reduction type, having a single layshaft, the airscrew and crankshaft being co-axial. The layshaft was placed above the airscrew shaft so as to fit inside the fairing of the centre cylinder-block.

A film taken at Venice during the actual race was then shown.

THE "METALLISATION" OF MATERIALS

A DISPLAY was given by British Airships, Ltd., at the Hotel Victoria in Northumberland Avenue on Monday of this week of articles treated by the new Einstein process of electrically depositing metal on non-metallic materials. As first announced in *FLIGHT* last week, the sole world's rights for this process have been acquired by British Airships, Ltd., of 21, Northumberland Avenue, London, W.C.2, to whom in future all communications concerning the new process should be addressed.

The articles displayed were of a very varied nature, and ranged from glass articles on which silver patterns had been deposited, to brown paper washers covered with copper, and turned into packing glands. That the new process has a very large number of applications is scarcely to be doubted. As to how far it can be applied to aircraft works still remains to be seen. No technical particulars were available, nor any test results of materials treated by the Einstein process.

It would appear that the new process (which consists in dipping the article to be "plated" in a solution which is the secret of the inventor, and the object of which is to turn

the non-metallic material into a conductor, and then placing it in a special bath for electrically depositing metal on it), might be useful in covering certain aircraft parts of wood so as to protect them against moisture. Seaplane floats instantly come to mind. The matter of coating aircraft fabric is still too much in the experimental stage to enable one to express an opinion. Sufficient adhesion between the metal coat and the underlying fabric is a first consideration. For airship work the question of permeability is important. We understand that a series of experiments is about to be commenced which should settle these questions.

As it is gathered that any metal can be electrically deposited by the Einstein process, there might also be possibilities of anti-corrosion treatment of Duralumin, or even of lighter metals, such as magnesium alloys, with chromium, for instance. Should that be found possible, the effect on metal construction might be very pronounced. But, as we have said, at the present moment sufficient information is not available to enable any very decided opinions to be formed.

London-Paris Record

CAPT. A. S. WILCOCKSON, of Imperial Airways, flew a Handley-Page air liner from London to Paris in 90 minutes on January 19. His average speed was 150 m.p.h., which was a record for this type of machine on the service. The equivalent record for the distance amongst the smaller commercial machines is 87 minutes.

R.A.F. Sport

ON January 18, the R.A.F. team beat Bedfordshire by three goals to one at Bedford. Play was even in the first half, but on the whole the R.A.F. was the better combination. The R.A.F. were beaten at rugby by Cambridge University on January 18 by one goal and six tries (23 points) to three tries (9 points). The game took place at Cambridge in wretched weather.

In Canada

IN our recent article on the commercial progress of the D.H. "Moth," mention was made of Western Canada Airways, Ltd., and Mr. J. H. Holley, the pilot who taught Sir Alan Cobham to fly. There has been an amalgamation between the two parties now, and under the new arrangement Mr. Holley will be manager of a flying school and also be in charge of passenger transport and aerial advertising. This activity started on January 1. A branch of Western Canada Airways, Ltd., will continue to carry passengers at week-ends and holidays from the Red River at River Park. The machines used are "Moths." Their school is attracting many pupils from all over Western Canada.

Off a Street!

MR. CLARENCE CHAMBERLIN left New York on January 23 for an air tour of the United States, in course of which he intends to travel 30,000 miles. His purpose will also be to lecture. Forty-eight States and Cuba will be visited. Before

his departure, he took off in his Sperry Messenger machine from a busy street. He wheeled it from the Kirkham Products Factory into the street, waited for a gap in the traffic, and then ascended, afterwards repeating the feat. His machine has a wing span of only 20 ft., and is considered the smallest in America.

Indian Aviation

THE Aero Club of India is striving for a larger Government expenditure on aviation, and in particular on ground organisation. The R.A.F. has most of the existing aerodromes, many of which are not suitable for civil use. Seaplane bases are required at Calcutta and Rangoon, between which an air service may be organised. It will be subsidised by the Indian Government, but the conditions of the subsidy will require a majority of Indian directors on the operating company, and Indian pilots. The vote for civil aviation for the current year is £30,000, the greater part of this being needed for the Directorate of Civil Aviation.

Celebrations at Cowes

To celebrate his golden wedding, Mr. S. E. Saunders, O.B.E., and Mrs. Saunders, entertained the employees of his boat-building and aviation company to supper on January 16 at Cowes. The party of guests numbered over 400, and included many private guests. Among them were Sir George Shedden and Lady Shedden, Mr. and Mrs. Hubert Saunders, Capt. D. Nicolson, Col. Outram, Chief of the A.I.D., and officers from the R.A.F. station at Calshot. The following evening, over 350 old townspeople were the guests of Mr. and Mrs. Saunders at tea, and next day the children of the town joined in the celebrations. The kiddies, numbering about 600, between the ages of 7 and 14, spent a delightful time at tea, followed by Punch and Judy, etc. On January 21 his employees at the Gunville and Afton brickworks, and on his farm and garden at Padmore, were also his guests at dinner.

PRIVATE FLYING

A Section of **FLIGHT** in the Interests of the Private Owner, Owner-Pilot, and Club Member

AN AERO CLUB FOR LIVERPOOL

THE endeavours at Liverpool to attract the aviation enthusiasts to the pleasure and importance of the light aeroplane movement have suddenly blossomed into great promise. It seems likely that a Liverpool Club will shortly start flying with at least two machines, if not four, and its advent will be entirely independent of official subsidy.

On January 26, a meeting was held in the Town Hall during the luncheon hour. Although this particular time of the day is usually given up very willingly to a certain enticing purpose quite 200 people attended the meeting, although it clearly meant that in many cases there had been sacrifices for the worthy cause of aviation. They came from as far as St. Helens, Wigan and Warrington, as well as from the more immediate Merseyside areas.

Sir Sefton Brancker and Brig.-Gen. P. R. C. Groves were present to support the Chairman, Mr. F. J. Marquis.

Sir Sefton Brancker made it clear that according to the present means available for subsidising the flying clubs no new clubs could hope for assistance. There were thirteen clubs now being assisted, and there was simply no more money left for others. The Treasury policy, he stated, was not to continue the subsidy beyond the three years which the current grants would run. But although it was hopeless to approach the Treasury for money there were possibilities in other ways, and they could count on the Air Ministry being in their service. He said that ten of the thirteen subsidised clubs were flying and the total membership was now 1,108 flying members and 853 associate members.

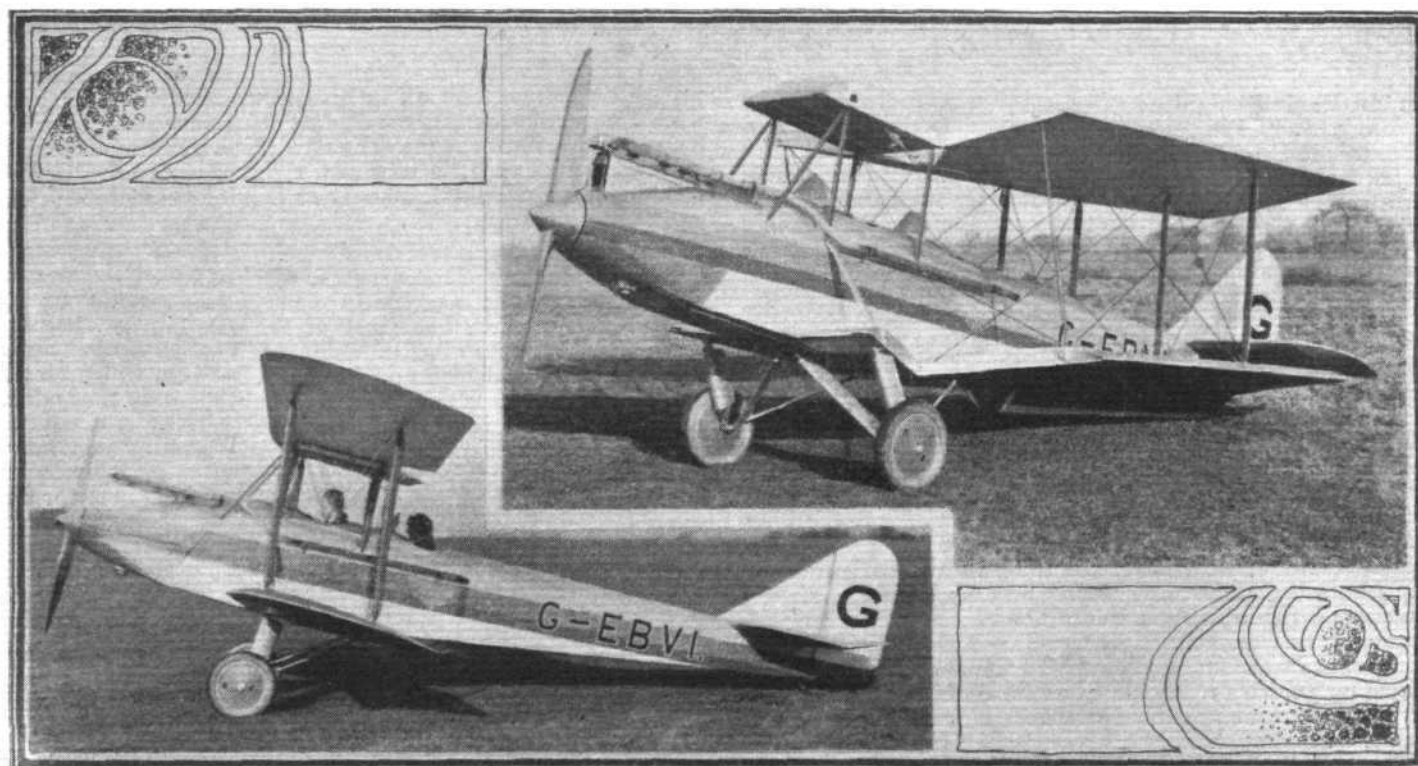
Other speakers were Brig.-Gen. Groves and Mr. H. Lewis, who obtained his pilot's ticket during the war when he was

over fifty years of age. An ex-Mayor, Sir Arnold Rushton, supported the proposal to form a club. A committee was elected with Sir F. C. Bowring as president; Lord Sefton and Lady Bailey as vice-presidents; and the following agreed to accept other positions:—Sir Benjamin Johnson; Sir A. Rushton; Mr. J. A. Tinne, M.P.; Mr. F. J. Marquis; Col. J. J. Shute, D.S.O.; and Mr. M. Anderson, who has done much to help the movement. The secretary, *pro tem.*, will be Mr. F. Davison, a member of the Lancashire Aero Club.

Mr. John F. Leeming also supported the meeting on behalf of the Lancashire Aero Club. About seventy people announced their intention of joining the club.

Two days later, January 28, the club held a small air meeting at the Hooton Aerodrome, which was attended by about 200 spectators, and heavy rain. Well-known pilots gave interesting flying exhibitions in the afternoon in spite of the bad weather. They were Lady Bailey, Capt. Broad, Capt. Stack, and Capt. Blake, the Blackburn Aeroplane Company's new pilot. Flying started about 2.30 p.m., when Capt. Stack took up Miss M. Hughes in a D.H. "Moth." This was the first official flight by a member of the new club. Flights were also given by Capt. Stack to those who had won the prizes in the competition for guessing altitudes held the day before. Some of those who became members during the afternoon were given free flights in an Avro "Avian." Capt. Blake flew the Blackburn "Bluebird," and Capt. Broad a D.H. "Moth." The Lancashire Club sent from Woodford, three of their pilots to lend their support. Mr. John Lord, of A. V. Roe and Co., was also present.

In the evening a dinner was held at which fifty guests were



This is the Avro "Avian" which A. V. Roe and Co. have supplied to the Hampshire Aero Club. It is fitted with the new undercarriage which is automatically swept back when the wings are folded, bringing the machine nearer the ground. Thus the engine is more accessible for inspection and adjustment. Also a good deal of weight is taken off the tail skid, thereby facilitating the manœuvring of the machine. These photographs were taken at Woodford Aerodrome, Cheshire, after the machine had been tested.

present. Capt. Stack gave his interesting lecture on his flight to India.

It was intended to resume the air meeting on the following day but heavy rain fell again and bad visibility prevailed, so the intention had to be abandoned. Despite this, however, the new club had clearly drawn wide interest to its project, and whatever ultimate difficulties it may experience without the help of an official subsidy, it seems to have the necessary initial support which should enable it to start and try the

interesting experiment. If it is successful it will provide an invaluable guide to the possibilities of an independent light aeroplane movement in other directions.

The club has been promised the gift of one machine by Sir Charles Nall-Cain, and another, a Blackburn "Bluebird," by the Blackburn Aeroplane Company. Hope is being placed on the generosity of the citizens of Liverpool to the extent that when flying starts, four machines may be at the members' disposal.

PRIVATE FLYING IN AUSTRALIA

THE beginning and progress of private flying and club flying in our Colonies have depended almost completely on English light aeroplanes. In Australia there were 93 civil aircraft in use during last year, of which the greater number were of English design and construction. Of this number 28 were light aeroplanes, all of early or modern English design and construction. D.H. "Moths" of the Mark I, Mark II, and X types were in a large majority; they totalled 22. The others were one Westland "Widgeon III," two D.H. 53's, one Avro "Baby," and two A.N.E.C. monoplanes. Ownership of these light aeroplanes was shared by private owners and the clubs, the latter having the larger share. But of the higher powered types of aircraft in use, such as early designs of Sopwiths, Avros and Bristols, no doubt, many of these were also possessed by private owners. These types have also been adapted to private flying in this country in many cases.

The possessor of the Westland "Widgeon III" is Mr. Milton C. Kent, a member of the Sydney Aero Club. He quickly brought prominence to his machine and credit upon himself by winning the Queensland Aerial Derby last November. He has been well known in aviation and photographic circles in Australia since the earliest days of aerial photography. Most of his work was done from an Avro 504k. One of his reasons for becoming a private owner and learning to fly himself was the convenience that it brought to his profession. For he had often found that on special occasions it was impossible to hire an aeroplane for photographic work. Naturally, in making his choice of a private machine one of the qualifications that he was forced to demand was a wide view, and in choosing the Westland monoplane he found this to a most satisfactory extent.

But it is not only in this respect that he has been contented. He has found the consumption rate of fuel exceptionally low, it amounting to 22 miles to the gallon. The oil rate, too, was less than a pint to the hour. These figures, together with the fuel capacity of the machine, have made it potentially capable of non-stop flights of 300 miles.

On the all-important issue of stalling, he has found the "Widgeon III" quite controllable under stalled conditions, and when stalled almost to the ground there was no tendency to spin and nose-dive. Under certain official tests by an officer of the Department of Civil Aviation a completely

stalled landing was made from an altitude of 1,000 ft. The rate of fall was about 10 ft. per second, and perfect control was maintained all the time. On this occasion the landing speed was about 20 m.p.h., whilst the forward run was about 20 yards.

The interests of the Avro "Avian" in Australia are being looked after by Capt. E. W. Percival, an ex-officer of the R.A.F., who lives at Sydney. He has purchased one for his own use. It is fitted with a Genet Mk. II engine.

The D.H. "Moth" is produced in Australia. In its interest Maj. H. de Havilland, managing director of the de Havilland Aircraft Pty., Ltd., South Melbourne, made a 4,000-mile air tour on a "Moth" recently, accompanied by Capt. Scott, of the Vacuum Oil Co. Pty., Ltd. It was an inter-station tour in Victoria, New South Wales and Queensland, flying from homestead to homestead, where there must be as great a need, if no desire, for light aeroplanes than anywhere else in the country. Cheap flying can make the life of isolated settlers infinitely more tolerable and civilised. It was rumoured that in the first week of his campaign Maj. de Havilland made seven new "Moth" owners. Incidentally, he has now flown over as much of Australia as many of the commercial pilots there.

One considerable flight of his was from Perth to Melbourne. A "Moth X" was exhibited in the showroom of a motor company in Melbourne, and attracted much interest. It was afterwards delivered by air to the Sydney Aero Club, and there christened "Sir Ross" by Lady Keith Smith.

The flying club movement is spreading as in this country. A South Australian club intended to start flying at a new aerodrome nine miles from Adelaide at the end of last year. A club at Geelong was at the same time only waiting for delivery of two D.H. "Moths" and spares from the Defence Department. A hangar was erected by voluntary labour and insured for £300. An instructor was engaged on a part-time basis at £250 per year, whilst the ground engineer's duties were to be carried out by volunteers acting in an honorary capacity.

At the end of September last there were 70 private pilots' licences in force and 11 licences for aerodromes, commercial and private. Apart from this, the Civil Aviation branch provided and maintained 45 aerodromes and 91 emergency landing fields.

New Private Owners

We give below a list of new private owners:—

Owner	Machine	Identification Letters
J. A. Anderson ..	D.H. "Moth X" ..	G-EBLV.
Capt. Stewart Burt ..	D.H. "Moth X" ..	G-EBTL.
E. L. O. Baddeley ..	Avro "Avis" ..	G-EBKP.
L. E. R. Bellairs ..	Avro "Baby" ..	G-EAUM.
F. G. Miles ..		
A. G. Fowler ..	D.H. "Moth" ..	G-EBMV.
Mrs. H. J. Jackaman ..	D.H. "Moth X" ..	G-EBVK.
Lieut. Glen Kidston ..	D.H. "Moth X" ..	G-EBVJ.
H. Kennedy ..	B. & P. "P9" ..	G-EBEQ.
L. J. C. Mitchell ..	Westland "Wood-Pigeon II" ..	G-EBJV.
C. E. Pitman ..	D.H. "Moth X" ..	G-EBUZ.
J. J. Scott Robertson ..	Avro 548 ..	G-EBPO.
T. H. Worth ..	D.H. "Moth X" ..	G-EBSP.
D. L. H. William ..	Sopwith "Dove" ..	G-EBKY.

The three owners below now possess the following machines:

Dr. Whitehead Reid ..	Westland "Widgeon III" ..	G-EBJT.
Flt.-Lt. F. O. Soden ..	D.H. "Moth X" ..	G-EBOU.
F. O. A. F. Scroggs ..	D.H. 53 ..	G-EBPO.

A "Moth" for Toronto

THE Toronto Aero Club has been presented with a D.H. "Moth" by Sir Charles Wakefield.

Mrs. Carberry Leaves for Kenya

MRS. CARBERRY, wife of Mr. Carberry, who has just flown his Fokker "Universal" machine to Kenya, left London for the same Colony on January 9. She has taken her own D.H. "Moth" with her. For some months both Mr. and Mrs. Carberry had been in England, the latter learning to fly at Stag Lane Aerodrome. Mr. Carberry is a pioneer pilot who before the war was well known as Lord Carberry.

Flying in East Africa

IN a very interesting letter from Mr. J. Graham Dawson of Nairobi, Kenya Colony, we are informed that there are now three machines in regular use in the Highlands. They are Mr. Carberry's Fokker "Universal" which he recently flew out from London; a D.H. "Moth" owned by Commander Robinson and a Klemm-Daimler monoplane owned by Mr. Heimsch. The latter machine is found to be very efficient. A local paper reported that the "Moth" reached an altitude of 14,000 ft. with a passenger recently, which was thought to be the record for East Africa. Mr. Carberry has been taking many passengers for flights over dusty Nairobi in weather that has been ideal. His machine is thought to run with strange quietness. The aerodrome is five miles out of Nairobi and an expert opinion considers that it is one of the best in Africa. There are rumours of other machines being on their way to the Colony. Our correspondent thinks that a seaplane service between Mombasa, Tanga, Daressalaam and Zanzibar would doubtless pay in time, and would certainly be a boon to the locality.

LIGHT 'PLANE CLUBS

London Aeroplane Club, Stag Lane, Edgware. Sec., H. E. Perrin, 3, Clifford Street, London, W.1.
Bristol and Wessex Aeroplane Club, Filton, Gloucester. Secretary, Capt. C. F. G. Crawford, Filton Aerodrome, Patchway.
Hampshire Aero Club, Hamble, Southampton. Secretary, H. J. Harrington, Hamble, Southampton.
Lancashire Aero Club, Woodford, Lancs. Secretary, C. J. Wood, Oakfield, Dukinfield, near Manchester.
Midland Aero Club, Castle Bromwich, Birmingham. Secretary, Maj. Gilbert Dennison, 22, Villa Road, Handsworth, Birmingham.
Newcastle-upon-Tyne Aero Club, Cramlington, Northumberland. Secretary, A. H. Bell, c/o The Club.

Norfolk and Norwich Aero. Club, Mousehold, Norwich. Manager, F. Gough, The Aerodrome, Mousehold, Norwich.
Nottingham Aero Club, Hucknall, Nottingham. Hon. Secretary, Cecil R. Sands, A.C.A., Imperial Buildings, Victoria Street, Nottingham.
The Scottish Flying Club, 101, St. Vincent Street, Glasgow. Secretary, Harry W. Smith.
Suffolk Aeroplane Club, Ipswich. Secretary, Courtney N. Prentice, "Hazelde", Stowmarket, Suffolk.
Yorkshire Aeroplane Club, Sherburn-in-Elmet, Yorks. Secretary, Lt.-Col. Walker, The Aerodrome, Sherburn-in-Elmet.

LONDON AEROPLANE CLUB

REPORT for week ending January 29.—Total flying time, 4 hrs. 50 mins. Flying instruction (with Capt. St. Barbe): E. M. Alexander, Miss Wilson, J. G. Maitland-Edwards; with Capt. F. G. M. Sparks: Miss O'Brien, G. W. Hall.
 Solo flying: A. R. Ogston, D. H. P. Esler, R. Sanders Clark, A. F. Wallace, C. E. Murrell.
 Flying was only possible on one day during the past week, viz., Wednesday, the 25th.
 Members' meeting: In order to give the members an opportunity of meeting the committee, and discussing with them the future policy of the club, it has been decided to hold a meeting of the members of the club on Wednesday, February 15, 1928, at 6 p.m., at the Royal Aeronautical Society, 7, Albemarle Street, London, W.1. (by kind permission of the Royal Aeronautical Society).

BRISTOL & WESSEX AEROPLANE CLUB

REPORT for week ending January 28.—Total flying time, 12 hrs. 50 mins. Instruction, 4 hrs. 40 mins.; solo, 7 hrs. 25 mins.; passengers, 45 mins.
 Passengers: With Mr. Bartlett, Miss Francis; with Mr. Tratman, Miss Bernard; with Mr. Jopp, Mr. Berland.
 Soloists: Mr. Roberts, Mr. Tratman, Mr. Downes-Shaw, Mr. Jopp, Mr. Brewer, Mr. Parkhouse.
 Under instruction: Mr. Arnold, Mr. Roberts, Mr. Bryan, Mr. T. H. Clarke, Mr. Parkhouse, Mr. Tanner, Mr. H. F. Tiarks.
 Sunday 22nd was the best day this winter, and we got in 10 hrs. 45 mins. flying on that day alone. The only other day on which flying was possible was Friday, when the wind dropped for a short time. The rest of the week has been a succession of strong westerly gales and heavy rain.

LANCASHIRE AERO CLUB

REPORT for week ending January 28.—Flying time, 4 hrs. 50 mins. Instruction, 2 hrs. 30 mins.; solo flights, 2 hrs. 10 mins.; passenger flights, nil; tests, 10 mins.
 Instruction: With Mr. Brown, Messrs. Hall, Benson, Brooking, Davison, Goss, Crosthwaite, Stern, and Miss Baerlein.
 Soloists (under instruction): Messrs. Ruddy and Browning.
 Pilots: Messrs. Meads, Crosthwaite, Michelson, Twemlow and Davison.
 On Saturday, Messrs. Brown, Dobson, and Goodfellow pushed off on three beautiful new Avians for the Liverpool Club's opening day at Hooton Park. As the old song has it:—

"Three pilots went sailing out into the West,
 Out into the West as the rain came down;"

After an extensive survey of West Cheshire, they reached Hooton in safety and spent the day in carting prospective members of the new club around the atmosphere. As a flying meeting the afternoon was rather spoiled by the weather, but the "pleasant social evening" which followed at the local hostelry was not affected thereby, and we render most hearty thanks to our hosts for their hospitality.

MIDLAND AERO CLUB LIMITED

REPORT for week ending January 28.—Total flying time, 6 hrs. Dual (with Capt. McDonough): Messrs. F. Scott, J. Baker, E. Lane, E. Wynn, R. Brinton, R. Darlington and H. Lattey.
 Solo: Messrs. E. J. Brighton, R. Jackson, S. H. Smith and E. R. King.
 Heavy rains and gales experienced during the week making flying only possible on two days.

NEWCASTLE-UPON-TYNE AERO CLUB

REPORT for week ending January 29.—Total, 7 hrs. 50 mins.; instruction, 5 hrs. 25 mins.; "A" pilots, 45 mins.; tests, 55 mins.; passenger, 45 mins.
 Instruction with Mr. Parkinson: Miss Klyver, Miss Rambaut, Dr. Alderson, Messrs. V. Heaton, Runciman, Griffiths, Horn.
 "A" Pilots: Mrs. Heslop, Mr. Mathews, Mr. Wilson.
 Passenger: Mr. M. G. Thirlwell with Mr. Parkinson from Sherburn.
 In addition to the above, 30 minutes' flying was carried out on the "Grasshopper," by Miss Leathart, under instruction with Mr. Parkinson. Also 30 minutes on Mr. Robertson's Avro, under instruction by Mr. Parkinson with Mr. Robertson and Mr. A. Bell. Mr. Robertson carried out his first solo on this machine.
 Exceedingly bad weather was experienced throughout the week with the exception of Friday. Sunday was particularly bad, the district being enveloped in fog down to the ground.
 A plane from LX was sent to Messrs. De Havillands' works, on Monday, and was received back at the Aerodrome on Saturday morning and was fitted to the machine in time for flying on Sunday, had the weather been satisfactory.
 This excellent service is very valuable indeed, and is fully appreciated by the Club.

NORFOLK & NORWICH AERO CLUB

FLYING Report for week ending January 29.—Total flying time, 9 hrs. 50 mins.
 Instruction with Capt. Lines: Messrs. W. Jewson, A. Cooper, R. Potter, N. Brett, N. Lindley, H. Mack, and G. Surtees.
 Soloists: Messrs. H. Pank, F. Gough, W. P. Cubitt, R. Harmer.
 Passengers: Messrs. R. Moore, Capt. Palmer, H. Green.

SCOTTISH FLYING CLUB, LTD.

REPORT for January.—The month of January has proved to be a most disastrous one from the flying point of view. For 12 days on end no flying whatever was possible, and the aerodrome became so much like a lake that, suggestions were made that we should fit floats to the Moth and use it as a seaplane. On the 15th things brightened up a little, and taking-off and landing was possible on a narrow strip near the cemetery boundary of the aerodrome. While the actual flying was unsatisfactory, the Committee were however, active, and it was arranged that the club should put on order at once their second Moth, and it is hoped to get delivery about February 15. Any member desirous of accompanying the pilot from Stag Lane to Renfrew on this flight is requested to communicate with the Hon. Secretary.

Members are reminded that the club's second dance will be held at the Waldorf Palais de Danse on February 10, and tickets for this dance can be obtained from the Secretary, and the price is 5s. Lady Weir has kindly consented to be hostess, and it is recommended that members desirous of obtaining tickets should procure them as early as possible as the demand is very brisk. A draw is being organised and tickets for this can be had from the Hon. Secretary in books of 20. The cost of each ticket is 1s., and the winners of the successful tickets will be given an extensive flight over Clydeside. Those interested should get their tickets at the earliest possible date, as the demand has been enormous, over 1,000 tickets having been sold so far. Those having tickets in their possession are reminded that the counterfoils and cash should be in the hands of the Secretary by February 8. It is hoped that with the funds raised by the dance and through the draw it will be possible to proceed with the alterations necessary to make the club-house into a really comfortable meeting place for members.

In our last report it was stated that the members of the club would have the opportunity of meeting the Executive after the meeting on the first Thursday of every month, and this will be the case for the month of February, but the day of the Executive meeting has been changed from Thursday to Monday, so that the meeting will take place in March on the first Monday instead of on the first Thursday.

The club's badge, which is very attractive, is well in hand, and members should be able to have same in time for the club dance. Members are reminded that it is their duty to secure donations for the Establishment Fund as, the club having purchased two Moths, this fund is now sadly depleted. If every member was to make a point of interviewing one or two of their worthy friends per week and explaining how necessary it is to support the club, there is no doubt that the Establishment Fund would profit considerably thereby.

The following are the statistics for the month of January, with comparison of those of the previous month:—

	December.	January.
	Hours.	Hours.
Total hours flown	61.15	33
Number of members under instruction	40	56
Number of solo flights	11	36
Total number of actual flights undertaken	174	91
Number of days when flying was possible	23	10
Number of members who secured their "A" licence	4	4
Total number of members with "A" licence		11

The following were the members who secured their "A" licence: A. M. Dunlop, Flying Officer Franks, J. D. Latta, Harry W. Smith.

SUFFOLK AEROPLANE CLUB

REPORT for week ending January 29.—Flying time, 5 hrs. 5 mins. Instruction (with Mr. Lowdell): Miss G. Rhodes, Messrs. R. Brown, H. Billinton, S. Schofield.
 Passengers with Mr. Lowdell: Mr. C. Hanson, Mr. Linfield.
 Soloists: Dr. Jas. Sleight, Mr. S. Schofield, Mr. C. N. Prentice.
 Mr. Schofield successfully passed his tests for his "A" licence on Sunday, after waiting many weeks for fine weather. On Saturday, Mr. Gough of the Norfolk and Norwich Club, with a passenger, paid us a visit, flying Moth G-EB0X.

YORKSHIRE AEROPLANE CLUB

REPORT for week ending January 28.—Flying time, 13 hrs. 20 mins.; instruction, 5 hrs. 15 mins.; soloists, 7 hrs. 15 mins.; passengers, 50 mins. Instruction (with Capt. Beck): Dr. Ling, Messrs. Balfour, Senior, Yeomans, Hall, Watson, Humphries, Hepworth, Wall, Jackson, Shires, H. Crowther, A. Crowther, Ostler, Ely, Brackenbury.
 Soloists: Messrs. Ellison, Humphries, Brown, Lister.
 "A" Pilots: Messrs. I. Thomson, Ely, Brackenbury.
 Passengers (with Captain Beck): Mrs. Brackenbury, Messrs. Taylor, Kay, Rhodes; (with Mr. I. Thomson), Mr. Humphries.
 Beyond a slight improvement in the weather, we have nothing eventful to report this week. A Service 9A, and Dick Atcherley on Lady Heath's SE5A were our only visitors.
 A word in favour of our Aerodrome: in spite of the adjacent districts suffering from the worst floods in the country, and despite the entire surface being covered with water, the ground has remained hard and usable the whole time. For preference the south side should be used while these conditions prevail.
 This week's funny story: Mr. Beck is giving a short address on "Aviation," at Leeds and Doncaster during the ensuing week!



African Survey Flight

SIR ALAN COBHAM left Aboukir Bay, near Alexandria, on January 27 and flew down the Nile to Luxor, a distance of 390 miles, which took six hours. The next day a visit was paid to the Valley of the Kings, and the flight was resumed from Luxor to Wadhi Halfa on January 29. After refuelling the "Singapore" continued, but was obliged to land at Berberi (Sudan) owing to a sandstorm. Khartoum was reached on January 31, the "Singapore" alighting on the Blue Nile in front of the Palace. Sir Alan Cobham drew up a report on the suitability of Malta as an air base at the request of the Malta Government. In this he mentioned that it must be borne in mind that the majority of machines leaving Malta for their next destination will be heavily loaded with fuel in addition to their ordinary load, and that therefore the aerodrome site must allow an exceptionally long run for ascents. He describes five possible sites, two of which are thought to be excellent, and two seaplane bases.

Great Flying Boat Cruise

THE four R.A.F. "Southampton" flying boats reached Calcutta on January 27. They will not leave here until February 3.

By Air to Mont Blanc

THE French Air Union Company has started an aerial tourist service to Mont Blanc. A Goliath machine fitted with two 540-h.p. engines, and carrying eleven passengers beside the pilot, M. Bajac, made the first journey recently from the Cointrin aerodrome, reaching an altitude of 13,200 ft. Lieut. Thoret accompanied the machine in a Spad. He is a pioneer in mountain flying.

The Ford "Flivver"

THE American pilot, H. Brooks, who was attempting a 1,400-mile flight between Detroit and Miami, on the new Ford light aeroplane—as reported last week—had to land after completing 700 miles, owing to ice collecting on the wings.

Col. Lindbergh's Tour

COL. C. LINDBERGH has been on a hunting trip in the highlands of Panama. He was expected to continue his South American propaganda tour on January 26 by flying from Colon to Venezuela. Bogota, Colombia, gave a great welcome to Col. Lindbergh when he arrived there on January 27. In the evening, a reception was held in his honour at the American Legation, and he was kept up late acknowledging the enthusiasm of the crowds. The following night, a formal banquet was held by the Government. He left Bogota early in the morning of January 29 and reached Maracay, Venezuela, at 6.10 p.m., after a very difficult flight. His course lay over the Andes, and after flying for 125 miles, he was forced to reverse his direction as the mountains were too high to cross. He eventually found an opening and crossed close to a ridge at an altitude of 12,000 ft. He was welcomed at Maracay by President Gomez and was made a Commander of the Order of the Bust of the Liberator.

The French S. American Tour

CAPT. COSTES and his companion Lieut. Le Brix reached Mexico City from Guatemala City on January 29 in the course of their flight from S. America to New York. They were received by the French Minister and members of the Legation, and by Mr. Morrow, the U.S. Ambassador. President Calles arrived later, and there was a procession to the French Legation in which a squadron of the Presidential Guards took part!

Airship Moored to Aircraft Carrier

THE U.S. dirigible "Los Angeles" made a successful mooring on the new American aircraft carrier "Saratoga," on January 27. This took place about 100 miles from the coast of Rhode Island, and was accomplished without difficulty. Both ships were reported to have been making considerable speed at the moment of landing. The airship has five 400-h.p. engines, and is about 658 ft. long.

Air Survey in Papua

Two Supermarine "Seagull" amphibians have concluded a season's air survey of Papua on behalf of the Anglo-Persian Oil Company. An area of 10,000 square miles was covered with the purpose of investigating the general structure and extent of tertiary informations in which oil had previously been discovered. They also had to select bases for future survey work which will be continued after the monsoon. The

natives were disturbed by the sight of aircraft at first, but later they became reassured, and actually came long distances to inspect the amphibians.

The Air Service Scores

IN spite of the fact that a severe storm in the vicinity of Genoa one day during the latter part of December last prevented the steamer "Conte Verde," of 25,000 tons, from making Genoa harbour, Marsaglia, the chief pilot of the S.A.N.A. air line, succeeded in accomplishing the flight, in a Dornier-Wal, from Palermo-Rome, and made a safe landing with his passengers at Genoa.

Australian Air Ambulance

THE Australian Inland Mission of the Presbyterian Church is establishing an aerial ambulance for use among the remote settlers. It will use a D.H.50 machine, supplied by the Northern Territory Aerial Services, Ltd., and located at Cloncurry, Queensland. It will be fitted to take a stretcher and carry a nurse and doctor. The area served will be 250,000 square miles.

Twenty Years Ago!

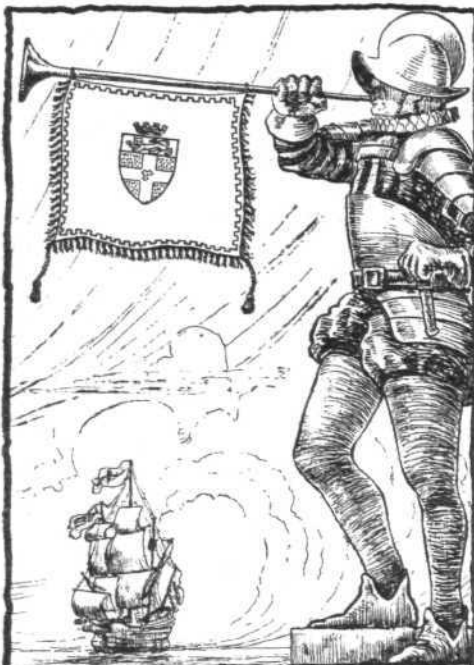
Extract from "The Auto." (Precursor of "Flight"), Feb. 1, 1908.

"Zeppelin IV.—In the course of a lecture delivered in Berlin on Sunday of last week, Count Zeppelin gave some particulars of his proposed new airship, 'Zeppelin IV.' It would be capable, he said, of remaining in the air for four consecutive days and nights, during which period it would be able to travel 2,500 miles with 12 passengers. . . . Weather permitting, the airship would travel from Berlin to Constantinople in 30 hours, and the Count actually calculated that a passenger service might be carried on between Berlin and Copenhagen at a profit of 10 per cent. on the outlay required, these figures being based on an average load of 25 passengers per trip at 50 shillings per head."



For Inter-Club Competition: The Cup offered by the Society of British Aircraft Constructors for the light aeroplane club scoring the highest number of marks during races in 1928, a first counting 5 marks, a second 3 marks, and a third 1 mark. The club with the highest number of marks will win the Cup.

SHORT BROS. AT PLAY

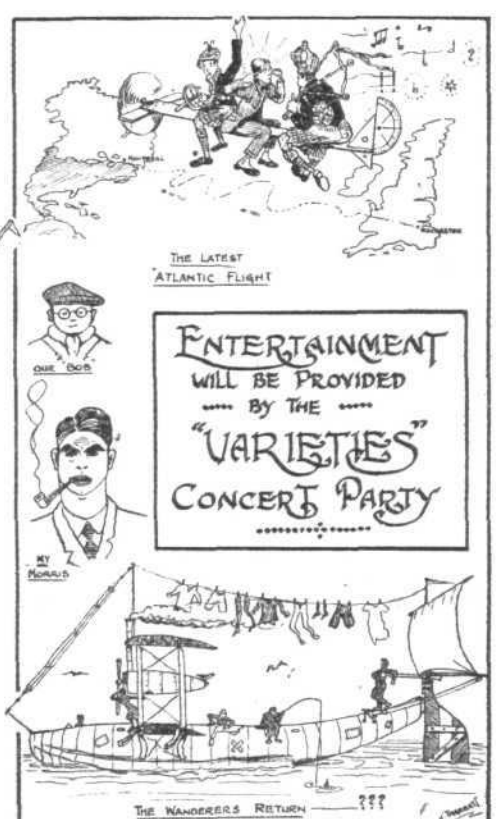
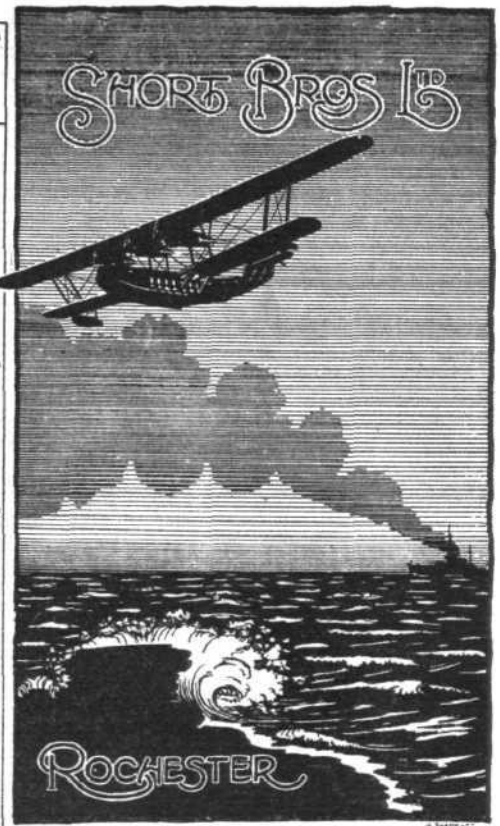


WHITE WINGS OF YESTERYEAR!

MESSRS. SHORT BROS. (ROCHESTER BEDFORD) LTD. ROCHESTER
DRAWING OFFICE & GENERAL STAFF
4th ANNUAL DINNER.
HELD AT THE SUN HOTEL, CHATHAM, ON JAN. 20th 1928 AT 7.30 PM.
CHAIRMAN: P. MUIR JONES.
COMMITTEE: MESSRS. LIPSCOMB, HEARNDEN, PETTS, LAWSON, GREETHAM.



THIS IS THE FIRM OF SHORT'S S.S.S.
THERE ARE THE SHOPS NUMBERED 1 TO 5
THAT FORM THE SHELL OF THE HUMAN HIVE
THAT MAKE THE FIRM OF SHORT'S S.S.S.
HERE THE FAMOUS MOTOR CAR PARKS
PARK YOUR CARS BETWEEN THESE MARKS
THE MARKS ARE LABELLED 'X & Y'
AND IF YOU DON'T THERE'S A HUE & CRY
THROUGHOUT THE SHOPS NUMBERED 1 TO 5
THAT FORM THE SHELL OF THE HUMAN HIVE
THAT MAKE THE FIRM OF SHORT'S S.S.S.
HERE ARE THE HORDES OF A.I. CRAFTSMEN
CLERKS, WORKMEN, TYPISTS, DRAFTSMEN
PARKING THEIR CARS IN THE MOTOR PARKS
THE MARKS ARE LABELLED 'X & Y'
AND IF YOU DON'T THERE'S A HUE & CRY
THROUGHOUT THE SHOPS NUMBERED 1 TO 5
THAT FORM THE SHELL OF THE HUMAN HIVE
THAT MAKE THE FIRM OF SHORT'S S.S.S.
HERE ARE THE MEN WITH PUTS OF BRAIN
WHO DESIGN THE PARTS WITH STRESS & STRAIN
THAT APPEAR ON PRINTS FROM TRACERS & DRAFTSMAN
THAT COME TO THE HORDES OF A.I. CRAFTSMEN
CLERKS, WORKMEN, TYPISTS, DRAFTSMEN
PARKING THEIR CARS IN THE MOTOR PARKS
THE MARKS ARE LABELLED 'X & Y'
AND IF YOU DON'T THERE'S A HUE & CRY
THROUGHOUT THE SHOPS NUMBERED 1 TO 5
THAT FORM THE SHELL OF THE HUMAN HIVE
THAT MAKE THE FIRM OF SHORT'S S.S.S.
HERE ARE THE TOOLS BOUGHT WITH LOTS OF WEALTH
BOUGHT TO KEEP THEM IN PERFECT HEALTH
USED BY THE MEN WITH PUTS OF BRAIN
WHO DESIGN THE PARTS WITH STRESS & STRAIN
THAT APPEAR ON PRINTS FROM TRACERS & DRAFTSMAN
THAT COME TO THE HORDES OF A.I. CRAFTSMEN
CLERKS, WORKMEN, TYPISTS, DRAFTSMEN
PARKING THEIR CARS IN THE MOTOR PARKS
THE MARKS ARE LABELLED 'X & Y'
AND IF YOU DON'T THERE'S A HUE & CRY
THROUGHOUT THE SHOPS NUMBERED 1 TO 5
THAT FORM THE SHELL OF THE HUMAN HIVE
THAT MAKE THE FIRM OF SHORT'S S.S.S.
HERE ARE THE MANAGER WORKING HIS BRAIN
CHASING THE BITS OF AIRCRAFT & BUSES
FORMED BY THE TOOLS BOUGHT WITH LOTS OF WEALTH
BOUGHT TO KEEP THEM IN PERFECT HEALTH
USED BY THE MEN WITH PUTS OF BRAIN
WHO DESIGN THE PARTS WITH STRESS & STRAIN
THAT APPEAR ON PRINTS FROM TRACERS & DRAFTSMAN



The ingenious menu card prepared for the 4th annual dinner held by the drawing office and general staff of Messrs. Short Brothers, of Rochester, on January 20, at Chatham. The guest of the evening was Mr. H. O. Short, and the duties of Chairman were undertaken by Mr. P. Muir Jones, supported by Mr. W. P. Kemp, Mr. J. H. Wood, Mr. J. Lancaster Parker and Mr. A. Gouge. In the course of his speech Mr. H. O. Short made a general survey of the progress of the Company during the past year. He mentioned the success that had attended their efforts in the original construction of all-metal aircraft and all-metal vehicle construction. He paid a tribute to the chiefs of the departments for their loyal service to the Company. In conclusion, he thanked those present for the kind way in which he had been received, and stated that he looked forward with confidence for prosperity during the present year. Following the dinner and speeches an excellent programme was given by the "Varieties Concert Party," under the direction of Mr. Will E. Lecore. For the complete success of the evening the committee, which consisted of Mr. Lipscomb, Mr. Hearnden, Mr. Petts, Mr. Lawson and Mr. Greetham, were to be congratulated.

THE ROYAL AIR FORCE

London Gazette, January 27, 1928

General Duties Branch

Wing Commander W. R. Read, M.C., D.F.C., A.F.C., is restored to full pay from half-pay (Jan. 19); Flight Lt. J. A. Glen, D.S.C., is placed on the half-pay list, Scale B (Jan. 1 to June 30, inclusive); Flying Officer J. Blackmore resigns his short service commn. (Jan. 25); V. F. Smyth, Lt., R.N., Flying Officer, R.A.F., relinquishes his temp. commn. on return to Naval duty (Jan. 12); The short service commn. of Pilot Officer on probation B. G. Thompson is terminated on cessation of duty (Jan. 13).

Stores Branch

A. H. E. Frost is granted a permanent commission as a Pilot Officer on probation with effect from, and with seniority of Oct. 19, 1927.

Medical Branch

Temporary Capt. R. G. J. Charlesworth (Dental Surgeon, General List, Army) is granted a temp. commn. as Flight-Lieutenant on attachment to Royal Air Force (Jan. 9). He will continue to draw emoluments from Army

sources; Flying Officer C. J. S. O'Malley is promoted to the rank of Flight-Lieutenant (Jan. 14).

Memorandum

Flying Officer R. S. Broderick relinquishes his temp. commn. on ceasing to be employed with the Electrical Services Works Co. (Jan. 31).

RESERVE OF AIR FORCE OFFICERS

General Duties Branch

Flight-Lieutenant J. F. Stallard ceases to be employed with the Regular Air Force (Jan. 6). The following Flying Officers are transferred from Class A. to Class C.:—C. E. B. Winch (June 10, 1927); R. H. Rose (Jan. 22).

The following Flying Officers relinquish their commissions on completion of service:—J. H. Taylor (Dec. 16, 1927); H. S. Eaton (Dec. 23, 1927). Flying Officer A. L. Willcox relinquishes his commn. on completion of service and is permitted to retain his rank (Dec. 12, 1927); Flying Officer G. Davis resigns his commn. (Jan. 24).

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:—

General Duties Branch

Wing Commander W. R. Read, M.C., D.F.C., A.F.C., to R.A.F. Station, Upavon, pending taking over command, 19.1.28.

Squadron Leader S. P. Simpson, M.C., to No. 22 Group H.Q., Farnborough, 25.1.28.

Flight Lieutenants: M. M. Freehill, D.F.C., to Central Flying School, Wittering, 17.1.28. S. T. B. Cripps, D.F.C., to No. 32 Sqn., Kenley, 25.1.28. C. Rappley, to No. 1 Sch. of Tech. Training (Apprentices), Halton, 27.1.28. G. A. F. Bucknall, to No. 19 Sqn., Duxford, 23.1.28.

Flying Officers: E. T. St. M. Brett, to No. 7 Sqn., Worthy Down, 30.12.27. A. W. Rowbotham, to R.A.F. Depot, Uxbridge, 21.1.28. V. G. H. Gee, to R.A.F. Depot, Uxbridge, 18.12.27. J. N. Berkeley-Miller, to No. 208 Sqn., Middle East, 23.12.27. J. W. Busted, to H.Q., Middle East, 3.1.28. C. G. C. Sullivan, to R.A.F. Depot, Uxbridge, 18.1.28. C. Guppy, to R.A.F. Training Base, Leuchars, 11.1.28. C. V. Lock, to No. 99 Sqn., Upper Heyford, 15.1.28. G. M. Pitts-Tucker, to No. 2 Armoured Car Coy., Middle East, 4.1.28. A. D. McDowall, to No. 100 Sqn., Bicester, 10.1.28. J. E. Davies, to No. 4 Flying Training Sch., Middle East, 5.1.28.

Flying Officers: M. W. Goldie, to Central Flying Sch., Wittering, 15.1.28. N. C. Ogilvie-Forbes, to R.A.F. Depot, Uxbridge, 16.1.28. G. C. Shepherd, to H.Q., Air Defence of Great Britain, Uxbridge, 19.1.28. H. E. E. Weblin, to R.A.F. Depot, Uxbridge, 7.1.28. E. C. Boucher, to No. 10 Sqn., Upper Heyford, 3.1.28.

Pilot Officers: H. R. R. Ackersley, S. O. Bufton, R. R. Carroll, E. E. Carter, D. S. Collins, F. B. S. Downey, M. M. Freeman, P. H. E. Grisewood, G. F. Hales, H. G. Hamilton, C. H. R. Little, J. F. Macdonald, J. E. McCann, D. B. McGill, D. Menzies, W. F. Murray, J. A. S. Outhwaite, G. F. Overbury, J. D. Richardson, J. L. Smallwood, F. L. Truman, S. R. Ubee, and G. Wood to No. 4 Flying Training School, Egypt, 6.1.28. C. R. McEvoy, to No. 31 Sqn., India, 7.1.28. J. R. H. Pott, to No. 111 Sqn., Duxford, instead of to No. 43 Sqn., as previously notified, 17.12.27. P. J. B. Chalmers, to No. 43 Sqn., Tangmore, instead of to No. 111 Sqn., as previously notified, 17.12.27. E. N. V. Everett and E. J. H. F. Moreton to No. 4 Flying Training Sch., Middle East, on appointment to Short Service commn., 13.1.28. J. E. M.

Stores Branch

Squadron Leader F. E. J. Coates, to No. 1 Stores Depot, Kidbrooke, 19.1.28. Flight Lieutenant A. M. Saywood, to R.A.F. Base, Calshot, 14.1.28.

Accountant Branch

Squadron Leader A. W. P. Phillips, O.B.E., to Armament and Gunnery Sch., Eastchurch, 24.1.28.

Flying Officer J. P. Cave, to R.A.F. Station, Duxford, 21.1.28.

Pilot Officers: R. D. Pratt, to R.A.F. Base, Calshot, 17.1.28. L. Chagwidden, to Station H.Q. and Storage Section, Andover, 17.1.28. F. C. Rendle, to Sch. of Photography, S. Farnborough, 17.1.28. N. Walleit, to Marine Aircraft Experimental Estab., Felixstowe, 17.1.28. G. H. White, to R.A.F. Station, Upavon, 17.1.28. R. L. M. Hall, to R.A.F. Station, Kenley, 17.1.28. V. H. Lewis, to No. 9 Sqn., Manston, 17.1.28. V. Matveeff, to No. 4 Stores Depot, Ruislip, 17.1.28. E. L. G. Le Dieu, to R.A.F. Station, Northolt, 17.1.28. J. R. Ackers, to R.A.F. Station, Upper Heyford, 17.1.28.

Medical Branch

Flight Lieutenants: E. G. Howell, to Sch. of Army Co-operation, Old Sarum, 2.2.28. D. B. Smith, M.B., to R.A.F. Station, Upper Heyford, 27.1.28. H. Penman, M.B., to No. 26 Sqn., Catterick, 23.1.28. G. M. Anderson, M.B., to R.A.F. Station, Biggin Hill, 25.1.28.

Flying Officers: N. I. Smith, M.D., to Station H.Q. and Storage Section, Andover, 26.1.28. J. P. Hederman, to R.A.F. Depot, Uxbridge, 2.2.28. E. A. Rice, M.B., to R.A.F. Station, Worthy Down, 26.1.28.

R.A.E.S. AND INST.AE.E.

Official Notice

FLIGHT-LIEUT. R. E. H. ALLEN will read a paper before the Royal Aeronautical Society, with which is incorporated the Institution of Aeronautical Engineers, on February 2, entitled "Ground Transport for an Air Organisation." The immense importance of an efficient ground transport in order to make civil aviation a success cannot well be over-emphasised, and Flight-Lieut. Allen will go very fully into the problem and will illustrate his lecture with a number of slides. The lecture will be given at the Royal Society of Arts, 18, John Street, Adelphi, W.C., at 6.30 p.m.

Dinner and Discussion. An informal dinner (morning dress) and discussion will take place at the Engineers' Club, Coventry Street, at 7.30 p.m. on Tuesday, February 14, 1928. The subject for discussion will be "Why the Aeroplane is Superior to the Seaplane in Imperial Communications." It will be opened by Major R. H. Mayo on behalf of the aeroplane, and by Col. the Master of Semphill, President of the Society, on behalf of the seaplane. There will be present many well-known designers and exponents of both schools of thought who will speak.

Admission will be by ticket only, and guests of members of the Society may be brought. The price of the tickets is 7s. All tickets applied for must be paid for, as the price of the dinner has been fixed on that assumption, whether used or not. As the accommodation is limited, an early application for seats is necessary.

J. LAURENCE PRITCHARD, Secretary.

WESTLAND AIRCRAFT SOCIETY

(The Yeovil Branch of the R.Ae.S. and Inst.Ae.S.)

The following is the lecture syllabus for the second part of the present session of the above Society:—

- Jan. 25 .. "Sir Henry Bessemer and His Work," by R. J. Norton, Esq., Director of Petters, Ltd.
- Feb. 8 .. "The Schneider Trophy Contest of 1927," by Flight-Lieut. Webster, A.F.C., R.A.F.
- Feb. 15 .. "Drilling for Oil and the Production of Petrol," by St. John Plevins, Esq., Anglo-American Oil Co.
- Feb. 23 .. "Performance Testing of Aircraft," by H. L. Stevens, Esq., B.A., A.F.R.Ae.S.
- Mar. 2 .. "High-Speed Aircraft," by F. Radcliffe, The Gloster Aircraft Co.
- Mar. 7 .. "Acetylene Welding," by H. H. Stoodley, Esq., British Oxygen Co.
- Mar. 14 .. "Inspection of Aircraft," by R. C. Taylor, Esq., A.F.R.Ae.S. Westland Works.
- Mar. 21 .. "Jupiter Aero Engines," by W. Jeffries, Esq., Bristol Aeroplane Co.

A film entitled "The Age of Speed" will be shown during the session, and towards the end of March a Mock Ground Engineers' Examination will take place.

Royal Air Force Cadet College

The following flight cadets successfully completed on December 16, 1927, their course of training at the Royal Air Force Cadet College. The names are arranged in alphabetical order:—J. E. Allen, G. E. St. J. Beamish—Winner of R. M. Groves Memorial prize, W. K. Boisigal, S. L. Blunt, P. J. B. Chalmers, H. A. Constantine, J. S. Dewar, J. H. L. Dillon-Trenchard, R. C. Field, S. R. Groom, P. J. H. Halahan, E. J. Hill, A. W. Hunt—Winner of Sword of Honour, W. H. Hutton, E. A. Jones—Winner of Abdy Garrard Fellows Memorial prize, H. H. Leech, J. E. MacCullum, N. B. Norris, H. C. Parker, K. F. T. Pickles—Winner of Air Ministry prize for Humanistic Subjects, J. R. H. Pott, G. H. H. Procter, N. A. Tait, D. J. Waghorn, E. R. White—Winner of Air Ministry prize for Aeronautical Science.

Vacancies for Apprentice Clerks, Royal Air Force

THE Air Ministry announces:—Sixty vacancies exist in the Royal Air Force for well-educated boys, between the ages of 15½ and 17, to enter as apprentice clerks. Approximately 40 of the posts will be filled by means of an open competition, which will be held by the Civil Service Commissioners in April at various centres, and the remaining 20 by direct entry of boys who have obtained an approved school certificate. Successful candidates will be required to complete a period of 12 years' Regular Air Force service after reaching the age of 18, in addition to the training period. At the age of 30 they may return to civil life or may be permitted to re-engage to complete time for pension.

Boys entered under this scheme undergo a two years' course of training in clerical duties, typewriting, shorthand, book-keeping and practical office routine, during which time their general education is continued under a staff of graduate teachers.

The apprentice clerks are paid 7s. per week for the first year and 10s. 6d. per week afterwards, until they have both attained the age of 18 and have been posted for duty after passing their final examination. The subsequent commencing rates of pay, varying from 21s. to 31s. 6d. per week, depend upon the degree of success achieved at this examination. In addition, they receive free board and lodging.

Detailed information regarding the apprentice clerk scheme can be obtained from the Royal Air Force, Gwydyr House, Whitehall, S.W.1.

Flight Cadetships for Aircraft Apprentices, R.A.F.

THE Air Ministry announces:—Aircraft Apprentices A. Earle (Beworth, Devon), C. J. Giles (Leyton), W. Sawyer and W. N. McKeechie (Golders Green), from No. 1 School of Technical Training (Apprentices), Halton, and Aircraft Apprentice F. Wicks, from the Electrical and Wireless School, Flowerdown, have been selected for cadetships at the Royal Air Force Cadet College, Cranwell, on the results of the examinations held on completion of their three years' training as aircraft apprentices.

"Sir Charles Wakefield" Scholarships, valued at £75 each, have been awarded to Flight Cadets A. Earle and C. J. Giles and the Hyde-Thomson Memorial Prize, valued at about £33, to Flight Cadet F. Wicks (Lacock, Wilts).

NOTICES TO AIRMEN

Recognised Points of Reference for Positions given by the Direction Finding Service

In future the position of an aircraft flying along a recognised air route in Great Britain, France, Belgium, Holland, Switzerland, Germany and Czechoslovakia, as obtained by D/F means and passed to the pilot by the appropriate D/F control station, will invariably be given with respect to the most convenient of a number of agreed points of reference which have been chosen for the route in question.

A list of the towns, aerodromes, &c., which will be employed as points of reference for British sectors of the Continental air routes is given below, and similar lists, giving the points of reference which will be employed for sectors of recognised air routes in the above-mentioned foreign countries will be published in the near future.

It will therefore be necessary that these towns, aerodromes, &c., employed as points of reference should be clearly marked on aircraft route maps, in order that the D/F service may be of the greatest use to pilots.

Towns, Aerodromes, &c.	Latitude	Longitude
Epping	51°42'N	0°06'E
Enfield	51°39'N	0°05'W
Billerica	51°37'N	0°25'E
Romford	51°34'N	0°11'E
Southend	51°32'N	0°43'E
Harrow	51°34'N	0°20'W
Charing Cross	51°30'N	0°08'W
Woolwich	51°29'N	0°05'E
Ealing	51°30'N	0°19'W
Sheerness (prohibited area)	51°26'N	0°45'E
Dartford	51°26'N	0°13'E
Gravesend	51°26'N	0°22'E
Kingston-on-Thames	51°25'N	0°18'W
Brooklands aerodrome	51°21'N	0°28'W
Epsom	51°20'N	0°16'W
Croydon aerodrome	51°21'N	0°07'W
Bromley	51°24'N	0°02'E
Wrotham	51°18'N	0°19'E
Chatham (prohibited area)	51°22'N	0°32'E
Sittingbourne	51°20'N	0°45'E
Faversham	51°18'N	0°53'E
Herne Bay	51°22'N	1°08'E
Margate	51°23'N	1°24'E
Guildford	51°14'N	0°34'W
Dorking	51°13'N	0°20'W
Penshurst landing ground	51°12'N	0°11'W
Redhill	51°14'N	0°10'W
Westerham	51°16'N	0°04'E
Sevenoaks	51°17'N	0°11'E
Maidstone	51°16'N	0°32'E
Lenham	51°14'N	0°43'E
Canterbury	51°16'N	1°05'E
Deal	51°13'N	1°24'E
Crawley	51°06'N	0°11'W
East Grinstead	51°07'N	0°01'W
Edenbridge	51°11'N	0°04'E
Tonbridge	51°11'N	0°16'E
Tunbridge Wells	51°08'N	0°16'E
Marden landing ground	51°10'N	0°31'E
Cranbrook	51°05'N	0°32'E
Headcorn	51°10'N	0°38'E
Ashford	51°08'N	0°53'E
Lympe aerodrome	51°05'N	1°01'E
Dover	51°07'N	1°19'E
Folkestone	51°05'N	1°11'E
Horsham	51°04'N	0°19'W
Haywards Heath	51°00'N	0°06'W
Crowborough	51°03'N	0°10'E
Robertsbridge	50°59'N	0°29'E
Tenterden	51°04'N	0°42'E
Littlestone landing ground	51°01'N	0°59'E
Petworth	50°59'N	0°36'W
Uckfield	50°58'N	0°06'E
Heathfield	50°58'N	0°17'E
Lewes	50°52'N	0°00'
Hailsham	50°51'N	0°16'E
Hastings	50°51'N	0°35'E
Rye	50°57'N	0°44'E
Dungeness	50°54'N	0°58'E
Varne Lightship	50°56'N	1°17'E
Eastbourne	50°46'N	0°17'E

(No. 1 of 1928)

W/T Route Traffic Messages

Classification of Messages and Allocation of Priority Prefixes

1. Route traffic messages will be divided into three categories, as below:—
(a) Messages concerned with the safety of life and the safe conduct of the air routes, upon receipt of which immediate action is imperative: these messages will be given the prefix "P," and their transmission accorded priority over that of all other messages.

(b) Messages of security and regularity, as, for example, arrival and departure reports: these messages will be given the prefix "D," and their transmission accorded priority over that of non-urgent messages.

(c) Ordinary messages, as, for example, code messages for the reservation of seats, which will be given no priority prefix, and accorded no priority in transmission.

The deciding authority for the granting of priority prefixes to route traffic messages will be the C.A.T.O. i/c of the aerodrome.

Code for Through Bookings of Seats in Aircraft

2. The following additions have been made to the list of code letters for towns given in the Revised Appendix to the Air Pilot of Great Britain—

Town.	Code Letters.
Brünn (Brno)	BU
Graz	GR
Halle-Leipzig (Schkeuditz)	HZ
Madrid	MD
Rome	RO
Venice	VD
Saint-Gall	SG

3. Amendments to the appropriate sections of the Revised Appendix to the Air Pilot will be made in due course.

(No. 2 of 1928.)

Wittering Aerodrome Regulations

PILOTS are warned that the northern portion of Wittering aerodrome is invisible from the vicinity of the station buildings, owing to the existence of a ridge of high ground which runs in a direction approximately E.S.E.-W.N.W., and is situated about 200 yards from the station buildings. This ridge introduces a risk of collision between aircraft taking off from S. of the ridge and aircraft on the ground beyond it.

When it is necessary to take off in a northerly direction, pilots must taxi up to the ridge and ascertain whether the ground beyond is clear, before taking off.

During northerly winds, pilots should avoid landing on the northern portion of the aerodrome. If, however, they are compelled to do so, they must not taxi directly towards the station buildings, but should make a wide detour towards the E. boundary and thus clear the area from which aircraft normally take off.

(No. 4 of 1928.)

Private Pilot's Licence

1. As some doubt appears to exist as to the circumstances in which a person who is not the holder of a pilot's licence may, under existing regulations, pilot a civil aircraft, it is pointed out that, unless a candidate is undergoing official tests for the purpose of obtaining a licence, the exemption from the holding of a pilot's licence applies only to a person who either

(i) is under instruction; or (ii) is flying for the purpose of becoming eligible for the issue of such a licence.

2. This exemption applies only within three miles of a licensed aerodrome, a Royal Air Force aerodrome, or an aerodrome under the control of the Secretary of State, and in cases falling under (ii), the conditions laid down in paragraph 82 of the Air Navigation Directions, 1926 (A.N.D. 6), have to be complied with.

3. It is also pointed out that the Royal Aero Club certificate is not the equivalent of a Class "A" pilot's licence, though it may be accepted as part of the qualification for the issue of such a licence.

4. Attention is called to the following regulations:—
proviso (b) to Article 3 (1) and proviso (c) to Article 4 (1) of the Air Navigation (Consolidation) Order, 1923, as amended; and
paragraph 82 of the Air Navigation Directions, 1926 (A.N.D. 6).

Copies of the above-mentioned Order (as amended) and Directions may be obtained through any bookseller or direct from His Majesty's Stationery Office, Adastral House, Kingsway, W.C.2, price 1s. 1d. and 6d., respectively.

(No. 5 of 1928.)

PUBLICATIONS RECEIVED

This Airship Business! By E. F. Spanner. Williams and Norgate, Ltd., 14, Henrietta Street, Covent Garden, London, W.C.2. Price 25s. net.

Pocket Diary for 1928. B. B. Moss and Co., Incorporated Insurance Brokers, Park Chambers, Sankey Street, Warrington.

The Gloster. Christmas, Number, 1927. The Gloster Aircraft Co., Ltd., Sunningend Works, Cheltenham.

Weights and Gauges of Non-Ferrous Sheets, Rods, Wire and Tubes. Charles Clifford and Son, Ltd., Fazeley Street Mills, Birmingham.

AERONAUTICAL PATENT SPECIFICATIONS

(Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motor. The numbers in brackets are those under which the Specifications will be printed and abridged, etc.)

APPLIED FOR IN 1926

Published February 2, 1928

26,100. M. A. MAZADE. Stabilizing apparatus for aircraft, etc. (260,260.)
32,313. J. WINTER. Propellers. (283,329.)
32,892. W. G. MACOMBER. Revolving cylinder engine. (283,336.)

APPLIED FOR IN 1927

Published February 2, 1928

9,534. H. JUNKERS. Fuel pumps and i.c. engines. (278,656.)
9,740. DORNIER-METALLBAUTEN GES. and Dr. C. DORNIER. Truss having a plurality of struts for the wings of aeroplanes. (272,456.)
18,059. SOC. ANON. BELGE DE CONSTRUCTIONS AERONAUTIQUES and R. DE GLYMES. Construction of aircraft. (274,092.)
18,141. J. HAW. Propeller. (283,423.)
18,409. ROHRBACH METALL-FLUGZEUGBAU GES. Monoplane flying-boats. (274,463.)
22,164. J. BOWEN. Means for air-cooling cylinders of i.c. engines. (283,436.)

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